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The Agricultural College

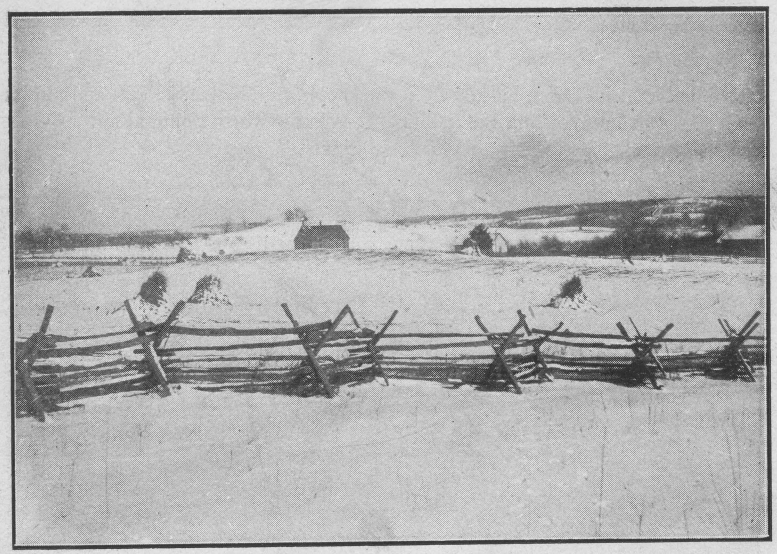
Extension Bulletin

CORN

PROF. C. G. McCALL

HAVE WE OBSERVED?

A. B. GRAHAM



The snow had begun in the gloaming,
And busily all the night
Had been heaping field and highway
With a silence deep and white.

—*Lowell.*

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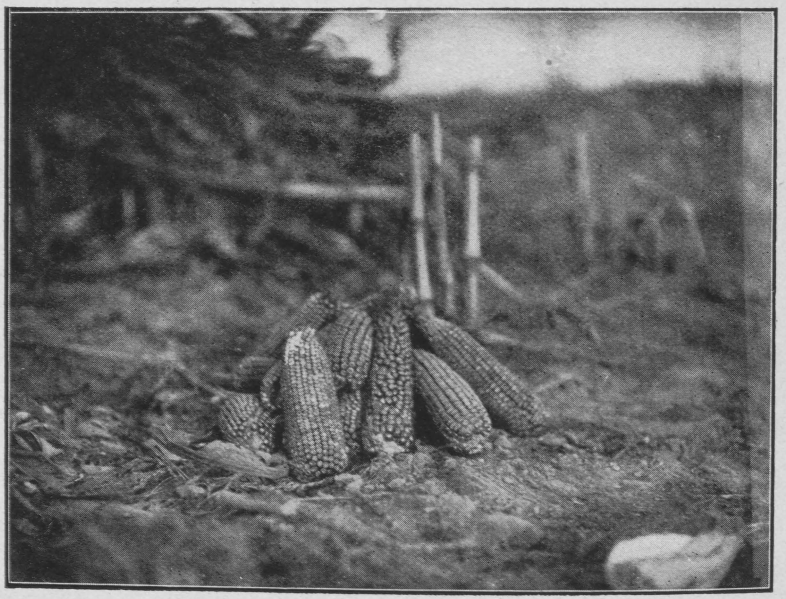
No. 1

After pile No. 1 had been husked from the shock, pile No. 2 (22 ears and nubbins) was husked from the fodder. "What is worth doing at all, is worth doing well."



No. 2

Twenty-two Ears and Nubbins Husked from Fodder.

CORN

Ignorance of our common plants, especially of our farm crops, is not confined to the people living in the city. To the country boy or girl these plants are too common to even attract attention. But let us go into the corn field some autumn day and see if there is not much of interest to learn from the study of the corn plant.

Carefully dig up a stalk of corn and if you will look closely you will find, besides the large roots that hold the corn upright, a large number of little thread-like roots passing out into the soil in all directions. These little roots are feeders for the corn plant. They go out into the small spaces between the soil grains and there collect water for the use of the plant. This water, as it passes back through the roots to the stalk, carries with it plant food which it has taken up from the soil. The plant does not get all of its food from the soil, however, as we shall see later.

In plowing the corn near the end of the season the farmer must see that his plow does not run too deep and thus cut off these rootlets that are feeding his plants.

Many of the large roots grow out from the stalk several inches above the ground and pass out into the soil as braces to give better support to the plant.

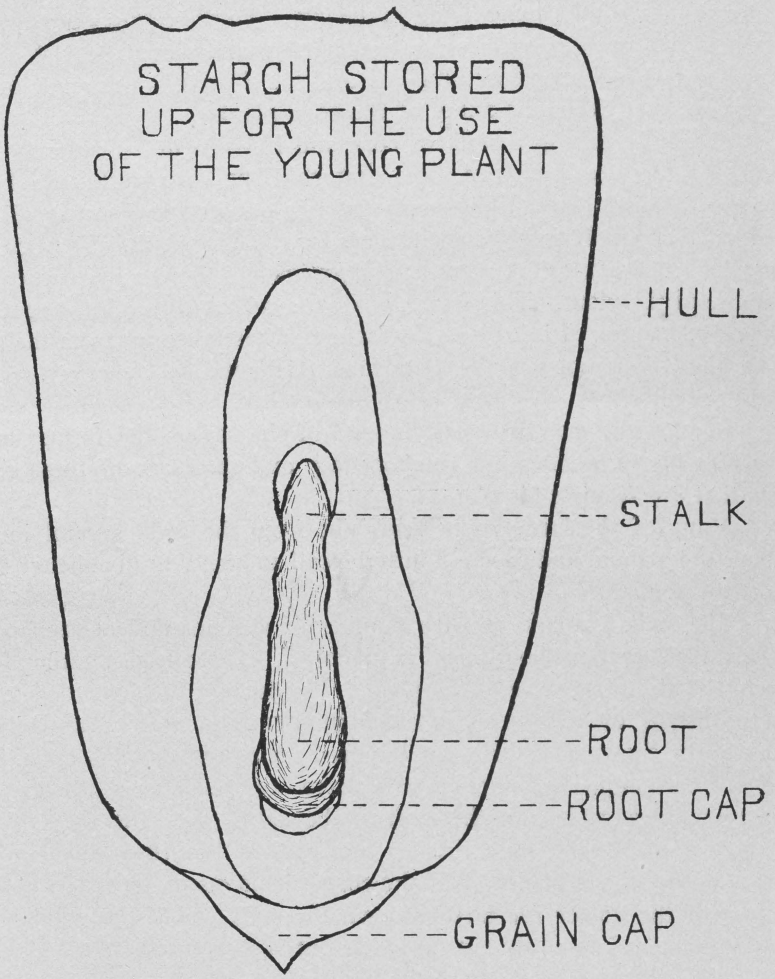
The stalk is made up of a number of sections and at each point where these sections join a leaf is given off. These leaves gather food from the air for the use of the plant. The amount of plant food taken from the air by the leaves is much greater than that obtained from the soil by the roots. Of every hundred pounds of dry substance in a field of corn eighty or ninety pounds have been taken from the air, and the remainder has been gathered from the soil by the roots.

At the top the stalk divides into several branches which go to make up the tassel or flower of the corn. This tassel, however, is only a part of the flower for farther down the stalk, about the middle, we find a bundle of small threads growing out at a point where a leaf joins the stalk. These threads mark the point where the ear is to appear and a little later the ear is found growing in the midst of this bundle of silks, as the threads are called. But before any grains can form, dust (pollen grains) from the tassel must fall on the silks.

Every tassel produces a very large number of pollen grains and being very light and dry they are easily carried over the field by even a slight breeze, so that very few silks fail to receive a share of the pollen.

If you trace the silks back under the husk you will find that each slender thread is attached to a single grain of corn.

The husk surrounds the ear to protect it from the weather and from birds and insects that might injure it.



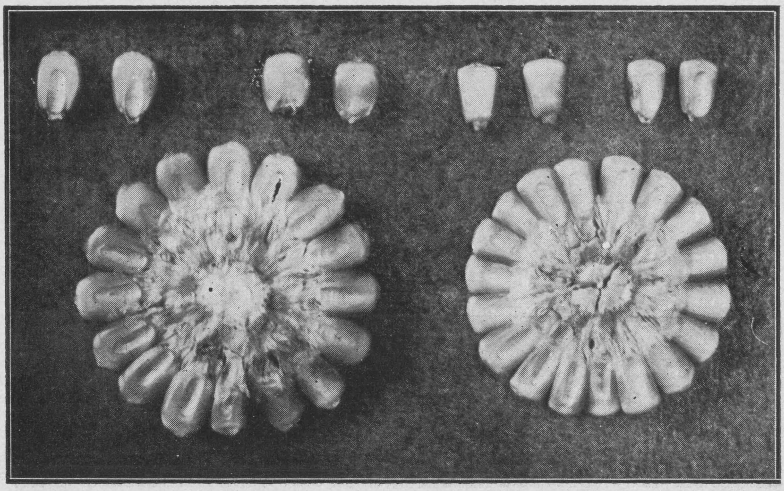
A Grain of Corn Enlarged, to Show its Parts

At first the grains are very soft, but as the stalk ripens and begins to turn brown the grains harden and by the time the corn is harvested, are quite firm, but they still contain a great deal of water. The grains gradually lose much of this water and finally become hard and firm.

If freezing weather catches the corn before it is thoroughly dry, the grains may be injured so that they will not grow if planted the following year.

Removing the ear from the husk, we find that it is made up of a large number of grains arranged in rows running lengthwise of the cob. Count the rows on a large number of ears. Is the number of rows always odd or even?

Remove a number of grains from the cob and notice that each grain is hollowed out on one side while on the other it is perfectly flat or slightly rounded. Is the hollow side turned toward the tip or toward the butt of the ear?



How many rows?
Grain somewhat round.
Open space between rows.

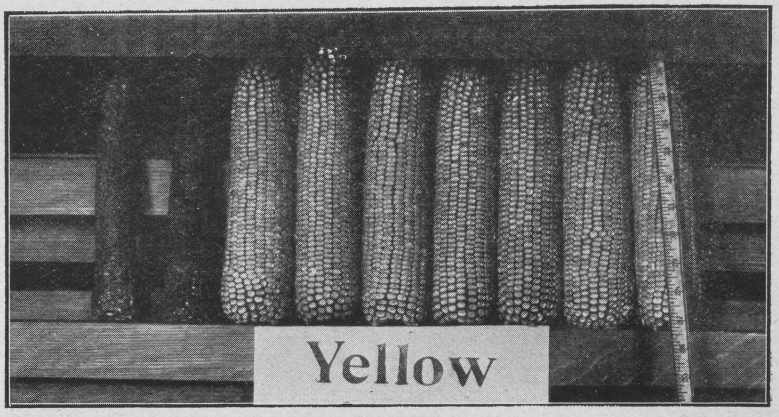
How many rows?
Grain triangular.
No open space between rows.

If the ears were of the same length, which would produce the more shelled corn by weight?

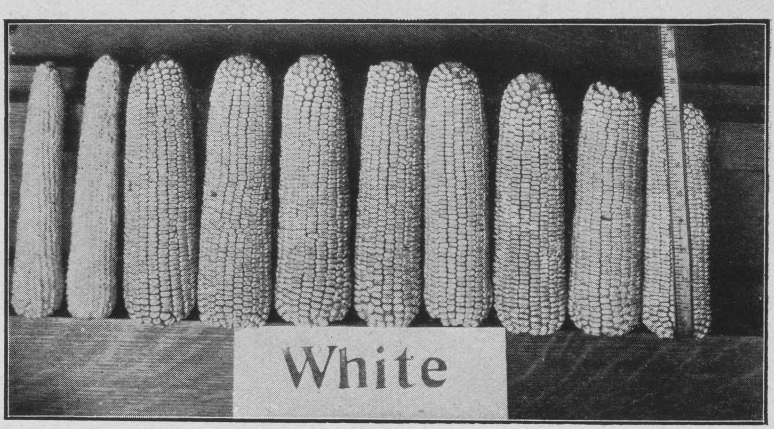
On the hollow side near the tip of every grain is found a tiny little corn plant snugly folded into the cavity. This little plant can be plainly seen with the naked eye by carefully cutting away the surface of the grain with a sharp knife.

Place several grains of corn in a box of moist sand or between layers of moist cloth or blotting paper. If these are moistened occasionally and kept in a warm place for a few days you will have the pleasure of seeing the little plant burst forth from the grain and send out its roots and leaves in search of food. During the cold weather or so long as the grain is perfectly dry the little plant does not grow,

but when the grain is placed in the warm moist soil in the spring the plant begins to grow and soon bursts out through the side of the grain. The end toward the tip of the grain grows down into the soil and sends out roots in search of plant food while the other end pushes



Yellow Corn Should Have a Red Cob.



White Corn Should Have a White Cob.

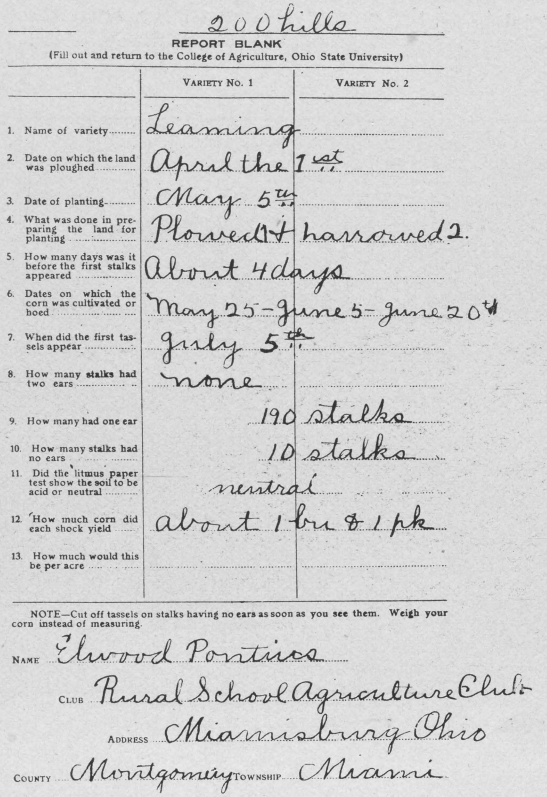
Notice how straight most of the rows are. Observe the shape of the ends of each ear.

its tiny leaves up through the soil and out into the air where they too may gather food.

Sufficient food is stored up in the grain of corn to keep the young plant growing until the roots in the soil and the leaves in the air are

able to supply the demand. Dig up a hill of corn after the plant has reached a height of several inches and you will find the empty hulls of the grains from which all the starch has been removed to feed the young plants.

Plant two grains of corn in a box of moist sand and when the plants are about one inch above the ground dig down beside both plants and remove very carefully the grain from one but leave the grain at-



200 hills

REPORT BLANK

(Fill out and return to the College of Agriculture, Ohio State University)

	Variety No. 1	Variety No. 2
1. Name of variety	Leaming	
2. Date on which the land was ploughed	April the 1st	
3. Date of planting	May 5th	
4. What was done in preparing the land for planting	Plowed it harrowed 2.	
5. How many days was it before the first stalks appeared	About 4 days	
6. Dates on which the corn was cultivated or hoed	May 25 - June 5 - June 20th	
7. When did the first tassels appear	July 5th	
8. How many stalks had two ears	none	
9. How many had one ear	190 stalks	
10. How many stalks had no ears	10 stalks	
11. Did the litmus paper test show the soil to be acid or neutral	neutral	
12. How much corn did each shock yield	about 1 bu & 1 pk	
13. How much would this be per acre		

NOTE—Cut off tassels on stalks having no ears as soon as you see them. Weigh your corn instead of measuring.

NAME Elwood Pontious

CLUB Rural School Agriculture Club

ADDRESS Miamisburg Ohio

COUNTY Montgomery TOWNSHIP Miami

A school boy's corn record made on blanks furnished by the College of Agriculture. Seeds and directions also were furnished.

tached to the other. Replace the sand around the plants and observe what happens in a few days.

The corn plant requires a large amount of one particular kind of food which is called nitrogen and which must come from the soil. If corn is grown year after year on the same soil the supply of nitrogen may become so low that the soil will no longer produce a good crop of corn, although there is still plenty of other plant food in the soil. The

nitrogen can be brought back to the soil by plowing under manure or by raising clover on the land.

Corn is one of the most valuable crops in the United States and is used for a great many purposes. Much of the corn crop is allowed to ripen, the ears and the dried stalks being fed to cattle and horses. If the corn is to be used in this form it should be removed from the field to the barn as soon as it is dry, for if it is left in the field until late in the winter, as is often done, the corn may lose half of its feeding value.

In some parts of the country much of the corn is harvested just before the ears are fully ripe, anl the whole plant, ears and stalks,

Fruit preserved by preventing air from entering the can.

cut into small pieces, are tightly packed in large bins or tanks, called silos. If the silo is perfectly tight these small pieces will pack in so tightly as to keep out the air and the green corn will be preserved as well as if it had been sealed up in a fruit jar. The farmer then uses practically the same method of preserving the whole corn plant as the housewife or the factory when they can sweet corn for table use. The whole corn plant thus preserved in a silo is called ensilage and is used largely as a winter feed for cows.

HAVE WE OBSERVED?

"And his cows were but glossy horse-chestnuts,
That had grown on his grandfather's tree."

Have you seen horse-chestnuts? What Ohio tree bears a fruit resembling a horse-chestnut? If you can, secure a leaf from each tree.

A SILO

Green corn and other feed can be preserved in a silo just as fruit is preserved in a glass jar. It's food value is not lessened by weathering.

"A little bird with feathers brown,
Sat singing in a tree;
The song was very soft and low,
And sweet as it could be."

Which of the following birds may it have been: robin, jay, flicker, lark, thrush, song sparrow, wren, or oriole? Why? (Wouldn't it be fine to have the "why" left out?)

"A moment too late, my beautiful bird,
A moment too late are you now;
The wind has your soft downy nest disturbed—
The nest that you hung on the bough."

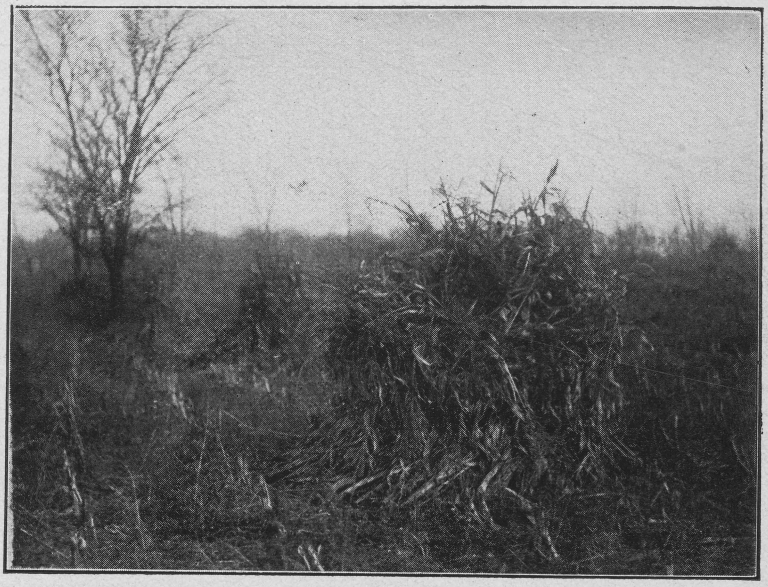
What bird built the nest that the author is writing about? Is the nest which you have seen hanging on a bough a downy one?

"While he hunted about the bank, he saw among the moss some fine wild strawberries, which were a bright scarlet with ripeness."

Do wild strawberries grow where there is moss?

"Fireflies wink on hill and plain."

What are fire flies?



Corn not shocked properly. Weathering prevents it having the food value it should have. Many ears in the husk are now on the ground.

"Give to the worm the orchard's fruit,
The wheatfield to the fly."

What worm gets a share of the orchard fruit? We all call it a worm. Is it a real worm? Will this worm make any such changes as the tomato or tobacco worm? If so, what will it become?

What is the name of the fly that injures wheat? During what season or seasons does it work? Try to find one this fall.

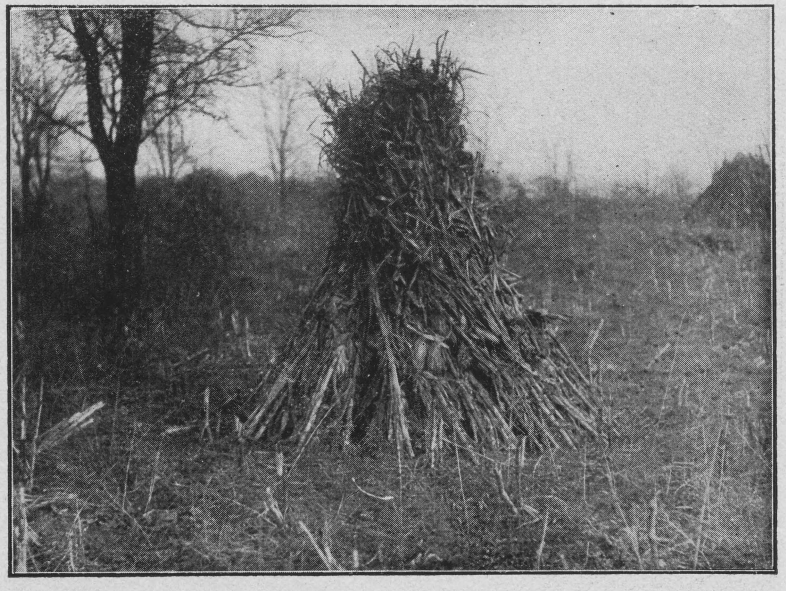
"The robin and the wren are flown,
And from the shrubs the jay
And from the wood-top calls the crow
Through all the gloomy day."

Are these verses true for October and November in Ohio? Where did the poet who wrote this live?

Read the third stanza of the "Death of the Flowers." Have you seen these flowers in nearly the order named?

And the brown thrush keeps singing, "A nest do you see,
And five eggs hid by me in the juniper tree."

What kind of a tree is a juniper? Does a brown thrush usually lay five eggs? Is it probable that a brown thrush would build a nest in a juniper tree?



A shock made at the same time as the one on the opposite page. Ears will be in good condition and the value of the fodder greater.

"Apple-blooms whiten and peach blooms fall,
And roses are gay by the garden wall."

Do the apple, peach, and rose bloom in the order named?

"Just take us betwixt your finger and thumb."

Do you pick a berry with finger and thumb, or with fingers and thumb?

"In a distant field, stood a large tulip tree, apparently of a century's growth, and one of the most gigantic."

Does the tulip tree grow in Ohio? If so, by what name is it commonly known?

"Our thrushes now are silent,
Our swallows flown away,
But robin's here in coat of brown,
And scarlet breast-knot gay.
* * * * * * * * * * *
Robin sings so sweetly
In the falling of the year."

Why are not these lines, from Wm. Allingham's "Robin Redbreast," true in Ohio?

Does what Whittier says in the fourth, fifth, sixth, and seventh stanzas of the "Corn Song" apply generally to Ohio? Did Whittier live where spring weather comes earlier or later than in Ohio?

Husked Corn. Badly scattered. What losses come from such work?

"I believe with six such legs,
You and I could walk on eggs."

Has the fly six legs?

"Come, little leaves," said the wind one day;
"Come over the meadow with me, and play.
Put on your dresses of red and gold;
Summer is gone and the days grow cold."

How much more of this little stanza we can feel than we can tell. Why attempt to explain.

SUBJECTS FOR COMPOSITION

Compositions can be easily written when we have carefully observed, or experienced, or read thoughtfully. They make up a very interesting part of a Friday afternoon or evening school program. No Farmers' Institute should pass by without having the boys and girls represented in the exercises.

The following subjects are suggested:

The Value of Birds.

Our Insect Friends.

Corn Piled Properly.

Our Insect Foes.
School Ground Improvement.
How to Make Butter.
Strawberry Growing.
How I Raise Potatoes.
Corn.
Farm Arithmetic.
How May Steps be Saved for Mother.
What a Boy Can Learn About Bees.
Why I Should be a Farmer.

We should be pleased to publish parts if not all, of a few well written compositions. Write a letter about your trips to the fields, to the woods, or along the road side and tell us what things you have learned.

RECORD KEEPING

Boys and Girls, if you hope ever to become the sucessful man or woman, it is necessary to learn to keep some simple records. Some must be kept continuously. Some for just long enough to prove or disprove whatever notion had been held.

The records you have been requested to keep have been very simple and are such as one should begin learning to keep. See that your record is up-to-date. If there is any part of it you don't understand, we shall be glad to explain.

If you belong to a Boys' or Girls' Club in your school or township and are doing experimental work, send your report to us through your secretary or teacher. Tear off just one leaf for us; keep the directions and the page next to it.

If for some reason, "Didn't get seed in time," "Chickens took everything," "Hogs or cattle ate it," "Worms destroyed it," etc., you did not succeed in raising a crop from the seed sent you, write the reason across the blank page and send it to us.

QUESTION NATURE NOT THE BOOK

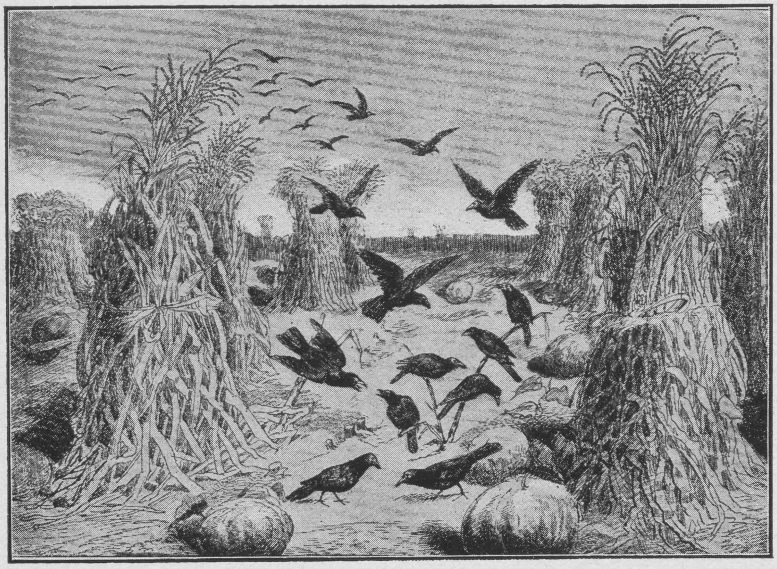
WATER IN THE AIR.

1. Why do kettles boil dry? What becomes of the water?
2. Why does a kettle boil dry more quickly on some days than on others?
3. Do clothes dry more quickly when it is windy or when it is calm?
4. Do they dry more quickly when it is cold or when it is warm?
5. Why do we blow upon hot soup?
6. Where does the steam from engines go?
7. What are clouds? Did you ever walk through a cloud on your way to school?
8. How fast do clouds travel?
9. Have you seen clouds traveling in two different directions? If so, how could that be?

10. Where does water that forms in drops on a pitcher in a warm room come from?

WHAT IS NATURE STUDY?

I should say that by nature study a good teacher means such study of the natural world as leads to sympathy with it. The key-note in my opinion, for all nature study is sympathy. Such study in the schools is not botany; it is not zoology; although of course not contravening



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What Criticisms Can You Make?

either. But by nature study we mean a presentation, to young people, of the outside world that our children learn to love all nature's forms and cease to abuse them. The study of natural science leads, to be sure, to these results, but its methods are long and have a different primary idea.—*Thomas McBride, University of Iowa.*

When we keep children confined with books away from the odor of wild flowers, the touch of the velvet grass, the taste of the wild berry, the song of birds or the sight of the daisy, we may know that this almost exclusively bookish training would have silenced the master singer of all time.—*Hallock.*

CHRISTMAS SONG.

H. H. JOHNSON.